FIG. 1 (b)

FIG. 1 (c)

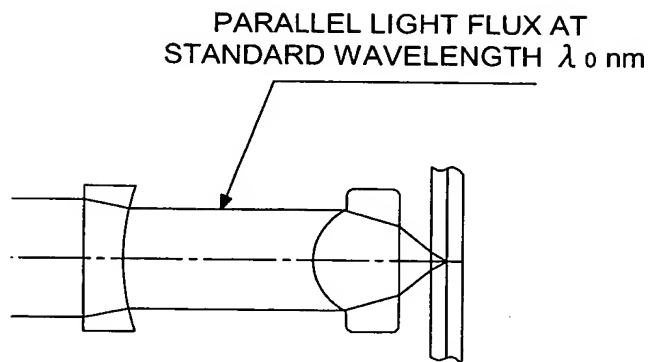# FIG. 1 (a)

OD

CA

OBJ

DP   DR

FIG. 2 (a)

PARALLEL LIGHT FLUX AT
STANDARD WAVELENGTH λ_0 nm

FIG. 2 (b)

CONVERGED LIGHT FLUX AT
(WAVELENGTH $\lambda_0 + \Delta \lambda$) nm

FIG. 2 (c)

DIVERGED LIGHT FLUX AT
(WAVELENGTH $\lambda_0 - \Delta \lambda$) nm

FIG. 2 (d)

λ_0 (nm)

SPHERICAL
ABERRATION

FIG. 2 (e)

$\lambda_0 + \Delta \lambda$ (nm)

SPHERICAL
ABERRATION

FIG. 2 (f)

$\lambda_0 - \Delta \lambda$ (nm)

SPHERICAL
ABERRATION

FIG. 3 (a)

WAVELENGTH CHARACTERISTIC
OF SPHERICAL ABERRATION
OF REFRACTING LENS

λ_0 (nm)

Δ SAR (+)

$\lambda_0 + 10$ (nm)

$\lambda_0 - 10$ (nm)

SPHERICAL ABERRATION
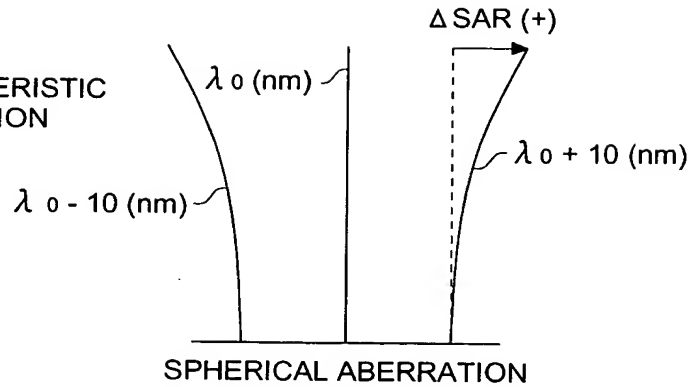
FIG. 3 (b)

WAVELENGTH CHARACTERISTIC 1
OF SPHERICAL ABERRATION
OF OBJECTIVE LENS OBJ

Δ SAR (+)

$\lambda_0 - 10$ (nm)

$\lambda_0 + 10$ (nm)

λ_0 (nm)

SPHERICAL ABERRATION
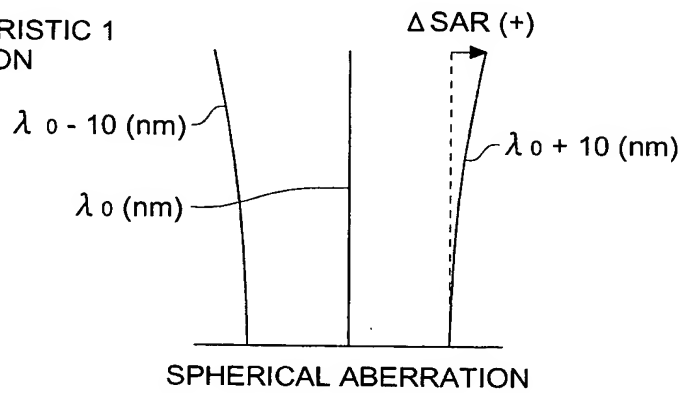
FIG. 3 (c)

WAVELENGTH CHARACTERISTIC 2
OF SPHERICAL ABERRATION
OF OBJECTIVE LENS OBJ

Δ SAD = 0

$\lambda_0 - 10$ (nm)

$\lambda_0 + 10$ (nm)

λ_0 (nm)

SPHERICAL ABERRATION
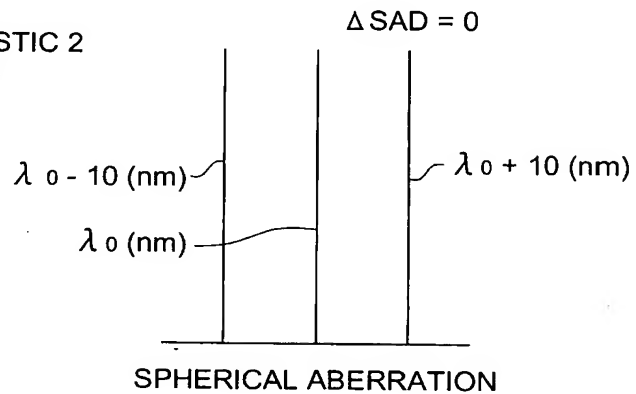
FIG. 3 (d)

WAVELENGTH CHARACTERISTIC 3
OF SPHERICAL ABERRATION
OF OBJECTIVE LENS OBJ

Δ SAD (-)

$\lambda_0 - 10$ (nm)

$\lambda_0 + 10$ (nm)

λ_0 (nm)

SPHERICAL ABERRATION

FIG. 4 (a)   FIG. 4 (b)

SECOND RING-SHAPED
ZONE RB2
FIRST RING-SHAPED
ZONE RB1

FIG. 5 (a)   FIG. 5 (b)   FIG. 5 (c)

PERIPHERAL AREA OUT

CENTRAL AREA IN

PERIPHERAL AREA OUT

FIG. 6 (a)   FIG. 6 (b)

FIG. 6 (c)

E1

E2

CEMENTED PORTION

FIG. 7 (b)   FIG. 7 (c)

FIG. 7 (a)

OD

CUL   OBJ

DP   DR

FIG. 8 (b)   FIG. 8 (c)

FIG. 8 (a)

EXP

OBJ

OD

DP   DR

FIG. 9(b)

FIG. 9(c)

FIG. 9(a)

CA

OBJ

OD

DP   DR

FIG. 10

FIG. 11 (a)

NA0.85

397.5nm —

— 407.5nm

—417.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 11 (b)

NA0.85

397.5nm —

— 407.5nm

— 417.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm

SPHERICAL ABERRATION.
· CHROMATIC ABERRATION

FIG. 12 (a)

NA0.85

407.5nm

397.5nm

417.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 12 (b)

NA0.85

397.5nm

407.5nm

417.5nm

-5.0E-3 -2.5E-3 0.0 2.5E-3 5.0E-3
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 13 (a)

NA0.85

397.5nm

407.5nm

417.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 13 (b)

NA0.85

407.5nm

417.5nm

397.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 14 (a)

NA0.85

407.5nm

397.5nm

417.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm
SPHERICAL ABERRATION
・CHROMATIC ABERRATION

FIG. 14 (b)

NA0.85

407.5nm

397.5nm

417.5nm

-5.0E-3 -2.5E-3 0.0 2.5E-3 5.0E-3
mm
SPHERICAL ABERRATION
・CHROMATIC ABERRATION

FIG. 15 (a)

NA0.85

407.5nm

417.5nm

397.5nm

-0.0050 -0.0025 0.0 0.0025 0.0050
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 15 (b)

NA0.85

407.5nm

397.5nm

417.5nm

-5.0E-3 -2.5E-3 0.0 2.5E-3 5.0E-3
mm

SPHERICAL ABERRATION
· CHROMATIC ABERRATION

FIG. 16 (a)

0.5 (λ)

-0.5 (λ)

FIG. 16 (b)

0.5 (λ)

-0.5 (λ)

FIG. 17 (a)

0.5 (λ)

-0.5 (λ)

FIG. 17 (b)

0.5 (λ)

-0.5 (λ)